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RELATION OF IONOSPHERIC AND MAGNETIC DISTURBANCES IN HAIGH LATITUDES FROM DATA OBTAINED IN MURMANSK.

As a result of the study of anomalous changes in ionosphere during magnetic storms and bay-like disturbances of the geomagnetic field based on the observations in Murmansk for 1954-1957 it was concluded that:

1. In high latitudes magnetic storms and bays are accompanied by anomalous changes, mainly, in the lower ionosphere. During the disturbances most frequent are a considerable increase of the critical frequencies of the layer E_s and a full or enchansed absorption. Anomalous changes of $f^{\circ}F2$ at the time of disturbances were not often observed, approximately in 20 per cent of the disturbances. During the bays and the storms reflections from the layers E_s and F2 were happened to be diffusive.

2. The nature of anomalous changes of the ionosphere and magnetic field changes during 24 hours and with the season. The morning hours are frequently characterized by full absorption, day hours- by intensified absorption and evening hours-by anomalous changes of $f^{\circ}F2$, night hours- high values of fE_s. The anomalous changes of $f^{\circ}F2$ are distributed within 24 hours as follows negative values of $f^{\circ}F2$, prevailing at day time turn into positive at evening hours. The character of magnetic disturbance also changes with the time of the day. Night and morning hours (21-6 hours) are usually accompanied by negative bays, day and evening (from 12 till 21 hours)- by positive. Storms are more often beginning at 16 to 24 hours, ending at 0 to 8 hours. In the day distribution of magnetic activity there are three maxima to be distinguished: at 20-22 hours, 2-3 and 14-17 hours in the local time.

The following variation of ionospheric disturbances has been discovered. During the year full absorption is more frequent at the equinox and winter time, intensified absorption and high day time values of fE_s- in summer, high night values of

$f^{o}F2$ are more often met in winter. The character of season variations of anomalous phenomena of ionosphere somewhat changes with the rise of solar activity. During the years of lower solar activity full and intensified absorption is the most frequent at the equinox periods, during the years of high solar activity the maximum of full absorption falls on winter, the maximum of the intensified absorption - on summer. The frequency of appearance of all disturbing elements except $fE_s \geq 4$ megacycles rises with the growth of solar activity.

3. Great agreement among anomalous changes in the lower ionosphere and magnetic disturbances testifies to the fact that magnetic disturbances in high latitudes are caused by the processes developing in the ionosphere during the corpuscular intrusion, mainly, at the height of 100 km. Magnetic disturbances are probably caused by a strong violation and change of the current system responsible for the quiet daily variations.